

Assessing the Effects of Pre-emergence Herbicide on Citrus Root Growth

Researchers: Ramdas Kanissery, Nirmal Timilsina

Contact: Ramdas Kanissery, rkanissery@ufl.edu

UF/IFAS SWFREC

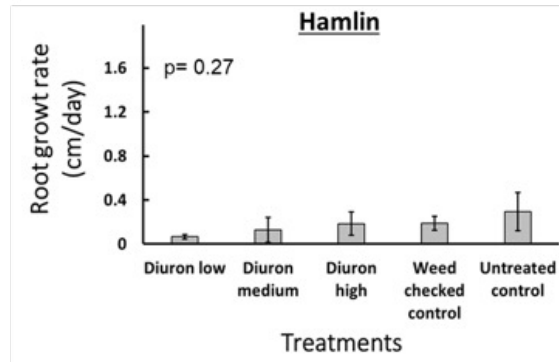


Figure: Root growth rates for Hamlin citrus after six months of observations from rhizotron imaging study. A similar trend was observed for the Valencia citrus. The data presented is from one study location, but a consistent trend was also observed at other study location. The difference in root length measured between two points in time is divided by the total days to calculate the root growth rate. Bars represent standard error (n=4), and p value is shown.

Effort Statement: The findings from this research were published in a peer-reviewed journal in November 2023.

Summary: A rhizotron imaging study was conducted in southwest Florida to assess the potential effects of the widely used pre-emergence (also known as residual) herbicide, diuron, on the root growth of young ‘Hamlin’ and ‘Valencia’ citrus trees. The study took place in two commercial citrus groves and involved applying diuron at three different rates (1.6, 3.2, and 6.5 lbs. a.i./acre) as pre-emergence

treatment. A weed-checked control that utilized post-emergence herbicides, as well as a non-treated control, were also included. The treatments were applied twice, once in the fall and again in the spring, following a randomized complete block design with four replicates. The findings indicate that, overall, diuron application did not significantly impact the growth of citrus roots in both the ‘Hamlin’ and ‘Valencia’ cultivars in both study locations during the observed timeline.

Take Home Message:

- The effects of applying the pre-emergence herbicide diuron on root growth in ‘Valencia’ and ‘Hamlin’ citrus trees were evaluated at two locations.
- Root images were captured using a nondestructive root imaging technique in mini-rhizotron tubes.
- Results indicate that over a 5-month period, the application of diuron generally had no significant impact on citrus root growth at both study locations.

Funding:



National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE